CHEMICAL CONTROL OF ALFALFA

Chemical control of alfalfa can reduce the number of tillage operations required to break up a stand of alfalfa. Tests were conducted in 1991 and 1992 at six locations in the Tisdale area and one at Hudson Bay to determine the effectiveness of chemical treatments on reducing regrowth of 3 or 4 year old alfalfa stands.

Nine plots were sprayed on alfalfa fields when they had 6" to 12" of regrowth. A shielded plot sprayer was used to spray the plots. The plots were 7 feet by 30 feet with 8 to 11 treatments and 2 or 3 replications. The major treatments are outlined in Table 1. Treatments were added at three sites to determine the effects of different rates of Roundup and 2,4-D amine.

The results of the chemical control of alfalfa are outlined in Table 2, 3 and 4. Control was visually rated on a scale of 0 to 100, with 0 being no control and 100 complete control with no regrowth.

Ratings were done in mid-August to early September for spring and summer treatments. Ratings for fall treatments were done in mid-June.

Lontrel plus 2,4-D, Banvel plus 2,4-D, Roundup plus 2,4-D and Estaprop provided good control of alfalfa when sprayed in the spring or summer. These treatments provided acceptable control for 2 months when sprayed in May, and until late fall when sprayed in July after the first cut of alfalfa. Also, 2,4-D ester, Roundup plus Banvel and Rustler plus Roundup provided acceptable control for 1½ months after spraying alfalfa. Some regrowth of alfalfa was evident on these plots 2 months after spraying.

Banvel, 2,4-D amine, Roundup and Roundup plus Refine Extra gave initial setback of alfalfa but did not provide acceptable control. Regrowth of alfalfa began about 1 month after spraying with substantial recovery of alfalfa 2 months after spraying.

TABLE 1 Chemical Treatment and Cost for Alfalfa Control

Treatment Chemical	Rate/Acre	Cost/Acre
Banvel ($265.00/9.5 L)	120 mL	$ 3.35
2,4-D Ester 600 ($5.75/L)	0.58 L	$ 3.35
Banvel & 2,4-D Ester	120 mL + 0.40 L	$ 5.65
Roundup ($10.00/L)	1.0 L	$10.00
Roundup & Banvel	1.0 L + 120 mL	$13.35
Estaprop ($75.00/10 L)	0.7 L	$ 5.25
Roundup & 2,4-D Amine (500)	1.0 L + 0.66 L	$12.70
Lontrel & 2,4-D E (600)* ($235.00/4 L)	0.15 L + 0.40 L	$11.10

*Lontrel rates on Boxall plot sprayed July 9 and Hayward plots were 0.3 L/acre of Lontrel.

TABLE 2 Ratings for Control of Alfalfa for Chemical Treatments at Nine Sites in Northeast Saskatchewan

Chemical Treatment	Rate/Acre	Chemical Control Rating (0-100)									
		Hayward *		Boxall			Kidney	Alex.	Fettes	Gaertner	Average **
		28/05/91	09/07/91	09/07/91	05/09/91	25/05/92	19/08/92	23/07/91	16/07/92	28/09/92	
Banvel	120 mL	37	61	60	30	36	4	69	59	--	43
24D Ester 564	0.58 L	73	80	74	64	74	81	78	84	37	76
Banvel & 24DE	120 mL & 0.4L	91	89	85	64	88	72	86	87	59	82
Roundup	1.0 L	24	60	45	54	56	35	61	32	67	45
Roundup & Banvel	1.0 L & 120 mL	53	89	75	80	84	52	94	67	72	73
Lontrel & 24D	0.3 L & 0.4 L	94	94	83	88	85	83	94	94	--	89
Estaprop	0.7 L	84	86	80	90	82	67	89	86	--	82
Roundup & 24D A	1.0 L & 0.66 L	83	92	91	93	88	74	94	57	70	83
Banvel	240 mL	--	62	68	52	--	--	75	--	--	--
24D Amine 500	0.67 L	--	--	--	--	53	19	86	42	--	--
Roundup & 24D A	0.5 L & 0.45 L	--	--	--	--	82	72	--	53	59	--
Roundup & 24D A	1.0 L & 0.45 L	--	--	--	--	81	65	--	56	--	--
Roundup & Refine Extra	1.0 L & 8 g	--	--	--	--	59	--	--	49	--	--
Rustler & Roundup	1.0 L & 0.13 L	--	--	--	--	72	56	--	68	70	--

Chemical control ratings 0 to 100 with 0 = complete regrowth no control of alfalfa, 100 = no regrowth, excellent control of alfalfa

*Date sprayed = Day/Month/Year

**The average shown includes the average of 8 sites excluding the Gaertner site.

Chemical cost of the treatments are outlined in Table 3. Control of alfalfa with 2,4-D ester alone costs $3.35 and can provide reasonable control at the lowest cost of all treatments. The addition of Banvel or using Estaprop improved control but also increases cost. Lontrel plus 2,4-D provides excellent control but the high cost makes this treatment questionable.

Alfalfa fields are commonly sprayed with Roundup for quackgrass control. The addition of Banvel or 2,4-D amine to Roundup or spraying with Rustler (premixed combination Roundup + Banvel) can provide good control of alfalfa at a reasonable cost. Only 2,4-D amine should be mixed with Roundup and not 2,4-D ester. Adding 2,4-D amine and possibly Banvel to Roundup can cause a slight antagonism and reduced quackgrass control especially with adverse growing conditions. Using good quality water at rates of 5 gals/acre may minimize antagonism.

On fields with patchy stands of quackgrass, alfalfa can be sprayed with 2,4-D ester to reduce alfalfa growth. Allow the quackgrass to grow and patch spray with Roundup. This system could provide economical control of both alfalfa and quackgrass.

Rates of Roundup plus 2,4-D amine were evaluated on three test plots (Table 3). Generally, reducing 2,4-D amine rates from 0.66 L/acre to 0.45 L/ac caused slight reductions in control. When 2,4-D amine and ester were sprayed alone, the ester formulation provided more effective and consistent control of alfalfa.

Time of spraying can effect alfalfa control. Treatments sprayed in late May to August generally provided good control of alfalfa. On the Gaertner plot sprayed in late September, poor control was obtained. Numerous frosts occured before spraying. The alfalfa was 8" - 10" tall at spraying time and showed no visible signs of wilting or frost damage. Treatments delayed the alfalfa but generally provided poor control and extensive regrowth by mid summer. Spraying in late fall after frost may provide variable results for control of alfalfa. Further research is required to determine the effectiveness of late fall spraying.

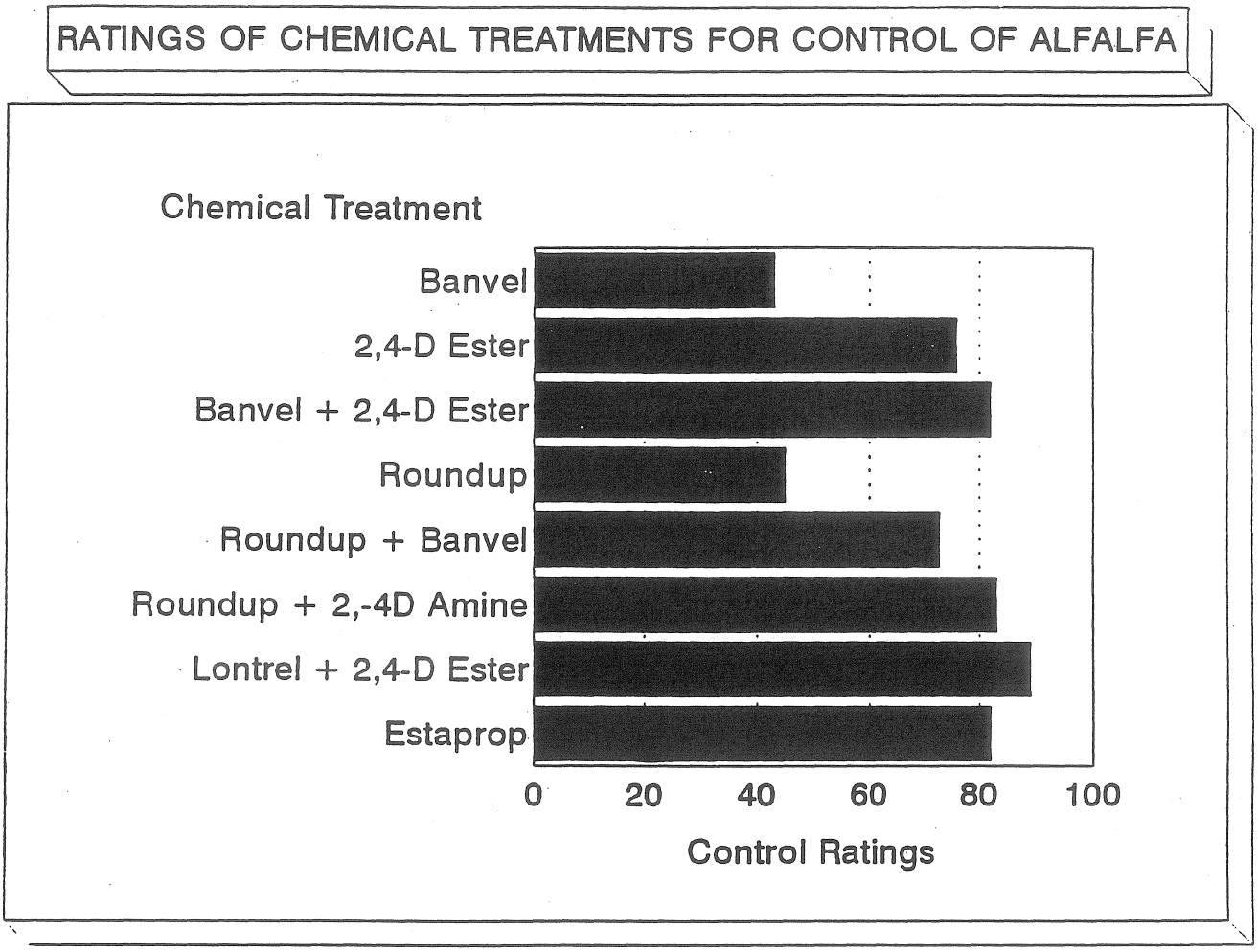
When spraying Roundup or 2,4-D amine, it is recommended that rainfall not occur within 6 hours of spraying. On the Fettes plot, rain occurred 1½ hours after spraying which could have reduced the control with Roundup and Roundup plus 2,4-D amine or Banvel. The ester formulation provided quicker uptake and more consistent control.

TABLE 3 Ratings for Control of Alfalfa with varying rates of 2,4-D Amine plus Roundup and comparisons of 2,4-D Amine and 2,4-D Ester formulations.

Chemical Treatment	Rate/ac.	Chemical Control Rating 0-100			
		Boxall May 25	Kidney Aug 19	Fettes July 16	Average
24D Ester	0.58 L	74	81	84	80
24D Amine	0.67 L	53	26	42	40
Roundup & 24D A	0.5 L & 0.45 L	82	72	53	69
Roundup & 24D A	1.0 L & 0.45 L	81	65	56	67
Roundup & 24D A	1.0 L & 0.66 L	89	67	57	71
Rustler & Roundup	1.0 L & 0.13 L	72	56	68	65
Banvel & 24D	120 mL & 0.4 L	88	72	87	82
Lontrel & 24D	0.15 L & 0.4 L	85	83	94	87
Estaprop	0.7 L	82	67	86	78

The chart below summarizes the effectiveness of different chemical treatments to control alfalfa.

The longer the bar on the graph, the higher the ratings and the better the control. Ratings over 75 are considered to be adequate control. Generally, treatments rating over 75 had fewer than two alfalfa plants per square yard two months after spring and summer treatments.



It is recommended that chemical control of alfalfa be used in combination with tillage. Generally, two or three tillage operations can be eliminated in breaking up an alfalfa stand by using chemical to control alfalfa. Chemical control stops growth of alfalfa and tillage can occur when rainfall is received. Alfalfa stands are easier to work and regrowth is greatly reduced.

Some producers are considering direct seeding alfalfa fields. Direct seeding alfalfa stands after chemical control usually results in some regrowth of alfalfa in the crop. Banvel + 24D, estaprop, 24D ester and lontrel plus 24D could be used to reduce alfalfa growth in cereal crops. However, weeds such as dandelions are often difficult to control with no tillage and could become a problem.

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